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ABSTRACT

BSIC HAS SELECTED DATA FOR INCLUSION, AND A METHOD OF PRESENTATION THAT-- (1) PROVIDES PRELIMINARY DATA, IN COMPARABLE FORM, ABOUT ALL RELEVANT SYSTEMS BUILDING PRODUCTS, (2) SURVEYS WITHIN THE LIMITS IMPOSED, THE PROBLEMS OF COMPATIBILITY BETWEEN SUBSYSTEM COMPONENTS AND TO IDENTIFY COMPONENTS WHICH ARE COMPATIBLE WITH ONE ANOTHER, (3) IDENTIFIES THE MANUFACTURER'S REPRESENTATIVES WHOM THE USERS WILL WISH TO CONTACT IN ORDER TO GO BEYOND THE PRELIMINARY PHASE FOR WHICH THIS CATALOG IS INTENDED, AND (4) STIMULATES MANUFACTURER, ARCHITECT, AND ENGINEER THINKING ABOUT THE PROBLEM OF COMPONENT COMPATIBILITY AND DETAILS. THE FOUR COMPONENT SUBSYSTEMS DISCUSSED ARE STRUCTURE, LIGHTING-CEILING, HEATING-VENTILATING -AIR CONDITIONING, AND DEMOUNTABLE-MOVABLE PARTITIONS. (TC)

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Building Systems Information Clearinghouse

Special Report Number One

Manufacturers Compatibility Study

EF 003 852

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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INTRODUCTION

Since its creation by the Educational Facilities Laboratories in December 1968, the Building Systems Information Clearinghouse (BSIC) has received numerous requests for information about products available for school building systems. Existing manufacturers' data, such as that contained in Sweet's Catalog, does not appear to cover adequately the area of systems building. BSIC's *Manufacturers Compatibility Study* is designed to provide specialized and comparable product information and reliable data concerning product compatibility for architects and school planners as a partial answer to these needs.

In preparing the catalog, BSIC has attempted to select data for inclusion and a method of presentation which will:

(1) provide preliminary data in comparable form about all relevant systems building products;

(2) survey within the limits imposed the problems of compatibility between subsystem components and to identify components which are compatible with one another;

(3) identify the manufacturers' representatives whom the users will wish to contact in order to go beyond the preliminary phase for which this catalog is intended;

(4) stimulate manufacturer, architect, and engineer thinking about the problem of component compatibility and details.

The "Post-SCSD" School Building System. In this first edition of the catalog, BSIC has limited the contents to building products which could be used in a post-SCSD school building system. In such a building system, the principles of dimensional coordination and the fundamental performance characteristics which were developed first in the SCSD program and later adopted by systems development and construction projects in Florida, Pennsylvania, and the Canadian provinces of Ontario and Quebec, have been used. In addition, components, capable of meeting the higher performance requirements of urban sites have been included. Only those products which are currently available, or which are in advanced stages of development, have been included.

Although in one project or another, a total of fourteen component subsystems which account for over eighty per cent of building cost have been bid, BSIC has selected only four subsystems for inclusion in this first catalog. These are:

(1) Structure

(2) Lighting-ceiling

(3) Heating, ventilating, and air conditioning

(4) Demountable and moveable partitions

The Contents of the Catalog. The catalog contains three types of information:

(1) Charts of preliminary data about the products available in each of the four subsystems. Notes will be found on the back of each chart. The lighting-ceiling and partition charts are followed by a page of supplementary data.

(2) Lists of manufacturer contacts for each of the products. The list for each subsystem follows the subsystem data chart and any supplementary pages.

(3) Two matrices which show the compatibility between products listed in the charts. One matrix shows the relationship between structural, lighting-ceiling, and HVAC subsystems. The other relates demountable and moveable partitions and lighting-ceiling products.

Unless otherwise indicated on the charts, all data has been examined, completed, and checked by the product manufacturer. Data indicated as incomplete is being collected for inclusion in the first revised catalog.

BSIC has not attempted to include cost data in this catalog. The number of cost variables – regional prices, the variety of possible installations, etc. – make such data of little use. Manufacturers' representatives who are the proper source for such information are prepared to provide cost data. BSIC will continue, however, to publish project costs in the NEWSLETTER.

Future Plans for the Catalog. Within the limits of its resources, BSIC plans include maintaining and enlarging the catalog. Revised charts, lists, and compatibility matrices will be distributed as the need arises. Each page in the catalog is dated and is punched for a ring binder if this method of binding is preferred to that provided. A list will be kept of each copy of the catalog distributed and revisions will be mailed to the persons on this list.

In addition to revising and completing data about the products included and adding new products to the charts, BSIC will make use of any suggestions received from catalog users about more useful directions it might take.

This catalog will form one of the major inputs to the first BSIC publication of 1970, a systems manual for architects and school planners. In this manual, both the design and procedural aspects of effective systems building will be discussed. Publication is currently scheduled for mid-1970.

Subsystem Compatibility Matrix I

Structure
Lighting-ceiling
HVAC

October 15, 1969

		Heating, ventilating, air conditioning										Structure					
		Group A			Group B												
		Carrier Air Conditioning	Chrysler Airtemp	Dunham-Busch	Chrysler Airtemp MZU**	Dunham-Busch RTMZ	ITT Nesbitt RTMZ	Lennox DMS1	Lennox DMS2	Lennox DMS3	Mammoth Adapt-Aire**	Mammoth Adapta-Zone**	Butler SPACE GRID	Haven-Busch JOISTRUSS*	Inland-Ryerson	Macomber V-LOK	Romac MODULOC	SYNCON
Lighting-ceiling	Anning-Johnson AJ	○	○			○	●	●	●	●			○		○	●	●	
	Armstrong C-60/30	○	○	○		○	●	●	●	●	○	○	●		○	●	●	
	Armstrong C-60/60	○	○	○		○	○	●	●	●	○	○	○		○	○	○	
	Butler LC-300	●				●	○	●	●	●	●	●	●					
	Hackett MOD II-V	○	○	○		○	○	●	●	●	○	○	○		○	○	○	
	Hackett MOD V	○	○	○		○	○	●	●	●	○	○	○		○	○	○	
	Keene SPEC-30**																	
	Lok MC-5A, C**																	
	Lok Custom**																	
	Luminous Ceilings TEC II	○				●	●	●	●	●			○		●	●	●	
	Luminous Ceilings TEC V	○				○	●	●	●	●			○		●	●	●	
	Luminous Ceilings TEC VI	○				○	●	●	●	●			○		●	●	●	
	Luminous Ceilings TEC VIII	○				○	●	●	●	●			○		●	●	●	
	Sunbeam IS 5000	○				○	○	○	○	○	○	○	○		○	○	○	
	Sunbeam IS 5200	○				○	○	○	○	○	○	○	○		○	○	○	
	SYNCON					○	○	○			○	○	○					●
Structure	Butler SPACE GRID	●				○	●	●	●	●	●	●						
	Haven-Busch JOISTRUSS*																	
	Inland-Ryerson	○	○	○		○	○	○	○	○	○	○						
	Macomber V-LOK	○	○	○		○	●	●	●	●	○	○						
	Romac MODULOC	○	○	○		○	●	●	●	●	○	○						
	SYNCON					○	○	○			○	○						

● indicates details of interfacing worked out.

○ indicates probable compatibility but interfacing not yet detailed.

*indicates product in development.
**indicates data incomplete on this product.

Structural subsystems October 15, 1969	Butler Manufacturing Co.	Haven-Busch Company	Inland-Ryerson Contruction Products Company	Macomber, Inc.		Romac Steel Company	(See note 4) SYNCON
System designation	SPACE GRID	JOISTRUSS		V-LOK		MODULOC	SYNCON
Horizontal module	5'-0"x5'-0"	5'-0"x5'-0"	5'-0"x5'-0"	5'-0"x5'-0"		5'-0"x5'-0"	5'-0"x5'-0"
Depth(s) of structure	35"	(See note 1)	(See note 2)	36"	60"	32", 34", 36" (See note 3)	36"
Live load ranges: roof floor	33#-55#			20#-50# 40#-100#	20#-50# ----	22#-30# Max. 100#	About 30#
Span ranges: roof, primary secondary	30'-60' 20'-40'			10'-45' 5'-80'	10'-45' 80'-110'	5'-45' 5'-80'	5'-35' 5'-75'
Span ranges: floor, primary secondary				10'-45' 5'-80'	---- ----	Max. 50' Max. 50'	---- ----
Most economic bay size: roof floor				30'x60' 25'x35'	n.a. ----	30'x60' n.a.	25'-30'x60'-65 ----
Cantilevers	Yes			Yes	Yes	Yes	No
Vertical module	12", 24"			Flexible		Flexible	Flexible
Ceiling heights	9', 10', 11', 12', 14', 16'			Suggested 9', 10'		Max. 30'	
Max. number of stories	2			2-3		4	1
Framing: bearing walls/columns Column section(s) Outside dimension(s)	Columns Tube 8"x8"			Columns Tube or W-F 5"x5", 6"x6", 8"x8"		Both Tube 5", 6", 8", 10", 12"	Both Cruciform 12"x12"
Lateral force bracing: Moment resisting frame Shear walls Cross bracing	 Yes Non-system Non-system			 Yes Non-system Non-system		 Yes Non-system Non-system	 Yes Yes No

Notes for structural subsystem chart.

Note 1: JOISTRUSS System is still in development. Performance characteristics will be available in late 1969. Availability will be announced in BSIC NEWSLETTER.

Note 2: Inland-Ryerson does not offer a system as such, but will provide engineering assistance and will bid on performance specifications for installed structure.

Note 3: MODULOC is manufactured in 34" and 36" depths to allow its use in additions to structures built with other products.

Note 4: SYNCON is not a manufacturer, but a group with rights to a building system of five proprietary subsystems and several HVAC options. The proprietary subsystems are:

1. Structure
2. Lighting-ceiling
3. Exterior skin
4. Sprinklers
5. Electrical and communications distribution.

The SYNCON Lighting-ceiling system is described on the lighting-ceiling subsystem chart.

Manufacturers of structural subsystems.

1. Butler Manufacturing Company
   P. O. Box 917
   Kansas City, Missouri 64141

   System: SPACE GRID

   Contact: Robert Smetanka

   Telephone: (816) 231-7400

2. Haven-Busch Company
   3443 Chicago Drive, S.W.
   Grandville, Michigan 49418

   System: JOISTRUSS

   Contact: John H. Busch

   Telephone: (616) 532-3641

3. Inland-Ryerson Construction Products Company
   Dept. F
   4033 West Burnham Street
   Milwaukee, Wisconsin 53201

   System: Combination of standard products

   Contact: Britt Clair, Manager – Systems Construction

   Telephone: (414) 383-4030

4. Macomber, Inc.
   Canton, Ohio 44701

   System: V-LOK

   Contact: Bernard E. Cromi, Vice President – Sales

   Telephone: (216) 456-2841

5. Romac Structural Systems, Inc.
   666-12 Citizens Building
   Canton, Ohio 44702

   System: MODULOC

   Contact: Thomas J. Cloonan, President

   Telephone: (216) 456-7379

6. SYNCON
   1717 South 12th Street
   Milwaukee, Wisconsin 53204

   System: SYNCON

   Contact: Joseph C. White
   Douglas C. Ryhn

   Telephone: (414) 671-1180

Lighting-ceiling subsystem

October 15, 1969

	Anning-Johnson Co.	Armstrong Cork Co.		Butler Manufacturing Co.	Hackett Ceiling Dynamics		(see n Keene Interior Systems
System designation	AJ System	C-60/30	C-60/60	LC-300	MOD II-V	MOD V	SPE
Planning module	60" x 60"	30" x 60"	60" x 60"	60" x 60"	30" x 60"	60" x 60"	60"
Smaller sizes available	No	Yes	Yes	Yes	Yes	Yes	Y
Assembly configurations: Coffer type Luminous ceiling Flat panel	 Yes Yes Yes	 Yes Yes Yes	 Yes No Yes	 No No Yes	 Yes Yes Yes	 Yes Yes Yes	 Ye N N
Fire rating	None	1 Hr. Roof 2 Hr. Floor	Testing in October 1969	None	Unofficial 1 Hour	Unofficial 1 Hour	
Tubes per assembly Tube wattage(s)	2 40W, 60W	1, 2 40W, 60W	2, 4 40W, 60W, 130W	2, 4 40W	2 40W, 60W	2, 4 40W, 60W	2, 3 40W
Performance: (see note 1) Tubes per planning module Footcandles maintained Watts per square foot	 2 Min. 70 5. 4	 a 1 2 48 96 191 1.4 2.7 5.4	Varies with fixture type	 2 4 89 180 2.7 5.4	Varies with fixture type	Varies with fixture type	 2 ca. 1 2.
Method of attachment: Suspended channel Suspended assembly Direct attachment	 No Yes Yes	 No Yes No	 No Yes No	Lays in structural grid.	 Yes Yes No	 Yes Yes No	 Y N N
Partition layout: On planning module only	No	No	Yes	No	No	No	N
Supply air: plenum duct and boot	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Ye Ye
Return air: plenum duct and boot	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Y Y
Accoustics: attenuation absorbtion (NRC)	STC44 0.75-0.85	STC 40-44 0.65-0.75	STC 40-44 0.65-0.75	35 db 0.60	STC 40-44 0.65-0.85	STC 40-44 0.65-0.85	STC35 0.6

	(see note 2)								(see note 2)
Keene Interior Systems	Lok Products Co.		Luminous Ceilings Inc.				Sunbeam Lighting Systems		Syncon
SPEC-30	MC-5A, C	Custom	TEC II	TEC V	TEC VI	TEC VIII	IS 5000	IS 5200	Syncon
0" x 60"	60" x 60"	60" x 60"	60" x 60"	60" x 60"	60" x 60"	30" x 60"	60" x 60"	60" x 60"	60" x 60"
Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Yes No No	Yes No No	No No Yes	No No No	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Coffered luminous ceiling	Yes No No	Yes No No
			Incombustible	Incombustible	One hour	Incombustible	None	None	Unofficial 1 Hour
2, 3, 4 40W (U)	2 40W, 60W	2 40W, 60W	2 40W, 60W	2, 3, 4 30W, 40W (U)		1, 2, 4 40W		1, 2 40W, 60W	1 to 8 40W, 60W	1, 2 40W, 60W	2, 4 40W
2 ca. 124 2.7	Varies with fixture type	Varies with fixture type	2 78 2.7	2 80 2.7	3 110 4.1	4 150 5.4	1 50 1.4	2 100 2.7	4 175 5.4	1 42 1.4	2 85 2.7	Varies with fixture type	Varies with fixture type	2 2.7	4 5.4
Yes No No	Yes Yes No	Yes Yes No	No No Yes	Yes Yes Yes		Yes Yes Yes		Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	No No Yes
No			No	No		Yes		No	No	No	No
Yes Yes	Yes	Yes	No Integral duct	No Yes		No Yes		No Yes	Yes Yes	Yes Yes	No Yes
Yes Yes	Yes	Yes	No No	Through fixture		Through fixture		Through fixture	Yes Yes	Yes Yes	Yes No
C35, STC47 0.60-0.75			None None	42 db 0.75-0.85		40-42 db 0.65-0.70		40 db 0.65-0.75	Varies 0.70-0.80	Varies 0.70-0.80	STC35

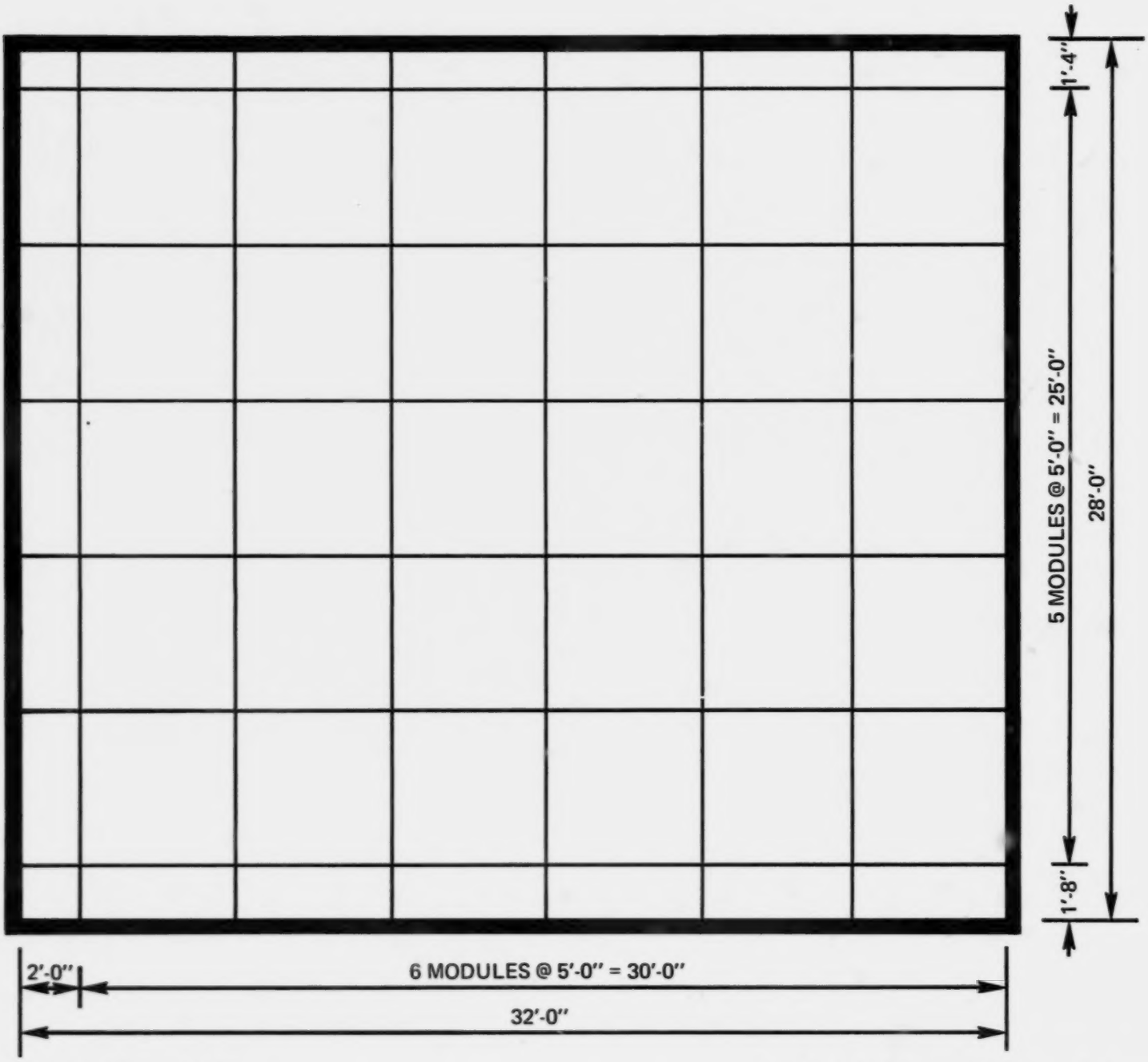
Notes for Lighting-ceiling Subsystem Chart.

Note 1: Lighting levels are calculated for the SCSD test room, a description of which is on the following page. Calculations are based upon manufacturer's photometric data for lighting fixtures and are for 40 watt high output tubes only.

The letter "a" in the "Tubes per planning module" row indicates a layout of one tube in every other planning module.

Note 2: At the time of publication of this chart, data on this product was incomplete. BSIC will publish revised charts as necessary.

ROOM FOR WHICH LIGHTING CALCULATIONS WERE MADE.
(Taken from SCSD performance specifications)



Ceiling height: 10'-0"
Width of room: 32'-0"
Length of room: 28'-0"

Area for calculation: 896 square feet

Reflectance values: ceiling 80%
walls 50%
floor 30%

Maintenance factor: 0.70

Manufacturers of lighting-ceiling subsystems.

1. Anning-Johnson Company
   1959 Anson Drive
   Melrose Park, Illinois 60160

   System: AJ System

   Contact: W. E. Kispert, Vice President

   Telephone: (321) MU1-1300

2. Armstrong Cork Company
   Lancaster, Pennsylvania 17604

   Systems: (1) C-60/30
   (2) C-60/60

   Contact: Stephen T. Alexieff, Chief Designer, Building Materials

   Telephone: (717) 397-0611

3. Butler Manufacturing Company
   (see listing under structural subsystem)

4. Hackett Ceiling Dynamics
   213 Puente Avenue, Box 2361
   La Puente, California 91746

   Systems: (1) MOD II-V
   (2) MOD V

   Contact: Paul D. Dail, Manager

   Telephone: (213) 330-1685

5. Interior Systems Division
   Keene Corporation
   Route 206 Center
   Princeton, New Jersey 08540

   System: SPEC-30

   Contact: Thomas R. Shine, Vice President

   Telephone: (609) 921-8171

6. Lok Products Company
   801 South Acacia Avenue
   Fullerton, California 92634

   Systems: (1) MC-5A, MC-5C
   (2) Custom

   Contact: Arnold D. Metcalf, Vice President – Sales

   Telephone: (714) 871-9500

7. Luminous Ceilings, Inc.
   3701 North Ravenswood
   Chicago, Illinois 60613

   Systems: (1) TEC II
   (2) TEC V
   (3) TEC VI
   (4) TEC VIII

   Contact: Arthur W. Segil

   Telephone: (312) WE5-8900

8. Sunbeam Lighting Company
   77 East 14th Place
   Los Angeles, California 90021

   Systems: (1) IS 5000
   (2) IS 5200

   Contact: Max Corazza, Sales Manager Sunbeam Interior Systems

   Telephone: (213) 748-6595

9. SYNCON
   (see listing under structural subsystem)

Heating, ventilating, and air conditioning

Group A: central plant systems with satellite air treatment units. It is assumed in this table that a central plant may serve any number of satellite treatment units.

October 15, 1969

		Carrier Air Conditioning Co.			Airtemp Division, Chrysler Corporation	Dunham-Bush, Inc.
System designation		42H	Dual Conduit	36B, C/37K	(see note 3)	(see note 3)
Type of satellite unit		Fan coil		Blow-thru reheat		
Location of satellite unit		Above ceiling	Above ceiling	Above ceiling, Wall space		
Unit size:	length	3'-10"	4'-0" to 20'-0"	1'-5" to 4'-11"		
Width		1'-8"	12"	2'-0"		
Height	(see note 1)	9"	10" to 20"	9"		
Weight		56 lbs.	65 lbs.	83 lbs.		
Heating output/energy source						
Gas (see note 2)		----	0.0-56.8 MBh	----		
Electricity		3.4-10.4 MBh	0.0-56.8 MBh	1.7-24.8 MBh		
Oil		----	0.0-56.8 MBh	----		
Hot water		5.0-65.7 MBh	0.0-56.8 MBh	3.1-55.4 MBh		
Steam		5.0-65.7 MBh	0.0-56.8 MBh	3.0-69.4 MBh		
Cooling output		2.7-22.1 MBh	3.8-40.0 MBh	1.4-24.3 MBh		
Air volume handled per unit		600 cfm max.	1050 cfm max.	900 cfm max.		
Optimum air volume range		200-600 cfm	400-1050 cfm	150-900 cfm		
Number of control zones per unit		1	1	1		

Note 1: Dimensions given for unit size are sizes of largest units.

Note 2: MBh = 1000 BTU/hr

Note 3: Manufacturer will make up package to meet performance specifications and requirements for central plant type systems.

Heating, ventilating, and air conditioning

Group B: rooftop and other unitary systems in which input energy is converted into treated air within the unit package.

October 15, 1969

	Airtemp Division, Chrysler Corp.	Dunham-Bush, Inc.	ITT Environmental Products (Nesbitt Inc.)		
System designation	MZU	RTMZ	Rooftop Multizone	DMS-1	
Location of unit/plant	Equipment room	Rooftop	Rooftop	Rooftop	E
Unit size: length width height weight		27'-4" 32'-6" 7'-0" 7'-6" 5'-2" 6'-5" 3700#-9700#	20'-0" 7'-8" 3'-6" 3500#-5000#	18'-4" 7'-9" 3'-6" Min. 2500#	
Space required: length width height		not applicable not applicable not applicable	not applicable not applicable not applicable	not applicable not applicable not applicable	
Special requirements	Outside air	Roof openings	Roof openings	Roof openings	
No. of control zones/unit	8	14, 16	Max. 12	12**	
Heating output/energy source Gas Electricity Oil Hot water Steam		 160-608 MBh 205-820 MBh ---- 64-787 MBh* 101-637 MBh	 300-500 MBh 35-140 Kw ---- 600 MBh 600 MBh	 250-500 MBh 45-105 Kw 420-490 MBh 100-700 MBh ----	
Cooling output (tons)			17.3-31.9	8, 11, 15, 22	
Air volume (cfm/unit)		3460-15120	4000-10000	5000-10500	

MBh = 1000 BTU/hour
Kw = 1000 watts

* system uses hot glycol input.

**dual duct option available.

ITT Environmental Products (Nesbitt Inc.)	Lennox Industries, Inc.			Mammoth Industries, Inc.	
op Multizone	DMS-1	DMS-2	DMS-3	Adapt-Aire	Adapta-Zone
Rooftop	Rooftop	Equipment room	Rooftop	Rooftop	Rooftop
0" 8" 6" 0#-5000#	18'-4" 7'-9" 3'-6" Min. 2500#	7'-8" 4'-10" 4'-10"	26'-4" 7'-9" 5'-2" Min. 5123#		3'-6"
applicable applicable applicable	not applicable not applicable not applicable	14'-0" 12'-0" 9'-0"	not applicable not applicable not applicable	not applicable not applicable not applicable	not applicable not applicable not applicable
of openings	Roof openings	Outside air	Roof openings	Roof openings	Roof openings
Max. 12	12**	12**	18**	12	14
0-500 MBh 5-140 Kw --- 0 MBh 0 MBh	250-500 MBh 45-105 Kw 420-490 MBh 100-700 MBh ----	200-560 MBh 45-105 Kw ---- 100-700 MBh 404-820 MBh	350-638 MBh 45-150 Kw ---- 300-1000 MBh 400-1110 MBh	235-1000 MBh 235-1000 MBh ---- 235-1000 MBh 235-1000 MBh	250-500 MBh ---- 250-500 MBh 250-500 MBh 250-500 MBh
7.3-31.9	8, 11, 15, 22	16, 22	33	10-50	18-35
00-10000	5000-10500	5000-10500	5000-15000		

Manufacturers of heating, ventilating, and air conditioning subsystems.

1. Carrier Air Conditioning Company
   695 South Van Ness
   San Francisco, California

   System: Combination of standard products.

   Contact: Gordon Mickelson

   Telephone: (415) 626-0550

2. Airtemp Division
   Chrysler Corporation
   P. O. Box 1037
   Dayton, Ohio 45401

   Systems: (1) MZU
   (2) Combinations of standard products.

   Contact: R. B. Stotz
   John K. Deller

   Telephone: (513) 461-5100

3. Dunham-Bush, Inc.
   101 Burgess Road
   Harrisonburg, Virginia 24003

   Systems: (1) RTMZ
   (2) Combinations of standard products.

   Contact: W. M. Kirkman, Vice President Sales, Heating and Air Conditioning

   Telephone: (703) 434-0711

   Regional Contacts:
   R. Combs, Mid Atlantic Regional Manager
   H. Hall, Jr., Midwest Regional Manager
   G. Paris, Western Division Manager
   R. Ollerman, Midwest Divisional Manager
   R. Lunt, Southeast Divisional Manager
   R. Thorpe, Northeast Regional Manager
   J. Howe, Southwest Regional Manager

4. ITT Environmental Products Division
   State Road and Rhawn Street
   Philadelphia, Pennsylvania 19136

   System: Nesbitt Rooftop Multizone

   Contact: Samuel W. Miller,
   Director – Planning

   Telephone: (215) DE2-2400

5. Lennox Industries, Inc.
   200 South 12th Avenue
   Marshalltown, Iowa 50158

   Systems: (1) DMS-1
   (2) DMS-2
   (3) DMS-3

   Contact: Normal L. Rutgers,
   Assistant to the President

   Telephone: (515) 752-5471

6. Mammoth Industries, Inc.
   13120-B County Road 6
   Minneapolis, Minnesota 55427

   Systems: (1) Adapt-Aire
   (2) Adapta-Zone

   Contact: Lowell Weide

   Telephone: (612) 544-2711

Subsystem Compatibility
Matrix II

Lighting-ceiling
Demountable Partitions
Moveable Partitions

October 15, 1969

Demountable and moveable partitions		Lighting-ceiling: Anning-Johnson AJ	Armstrong C-60/30	Armstrong C-60/60	Butler LC-300	Hackett MOD II-V	Hackett MOD V	Keene SPEC-30**	Lok MC-5A, C**	Lok Custom**	Luminous Ceilings TEC II	Luminous Ceilings TEC V	Luminous Ceilings TEC VI	Luminous Ceilings TEC VIII	Sunbeam IS 5000	Sunbeam IS 5200	SYNCON
Group A	Donn CRUSADER	●	●	○	●	○	○		○	○	○	○	○	○	○	○	
	Hauserman DOUBLE-WALL	●	●	○	●								●				●
	Mills CLASSROOM	○	●	○		○	○		○	○		○	○	○	○	○	
	National Gypsum CONTEMPOWALL	○	○	○	○	○	○				○	○	○	○	○	○	
	Penn Metal PENCILINE	○	○	○	○	○	○	●	○	○		○	○	○	○	○	
	Penn Metal PENCRAFT	○	○	○	○	○	○	●	○	○		○	○	○	○	○	
	Penn Metal PENWALL	○	○	○	○	○	○	●	○	○		○	○	○	○	○	
	VMP CORPORATE	○	○	○	○	○	○		○	○		○	○	○	○	○	○
	VMP TWINLINE	○	○	○	○	○	○		○	○		○	○	○	○		
	U. S. Gypsum VAUGHAN**																
Group B	Advanced TYPE 12**																
	Donn UNITIZED	○	○	○	○	○	○		○	○	○	○	○	○	○	○	
	Hauserman READY-WALL	○	○	○	○												
	Hough SERIES 8000	○	●	●	●	○	○				○	○	○	○	○	○	
	Hough 8100	○	○	○	○	○	○				○	○	○	○	○	○	
	Hupp MAGNAWALL 400	○	○								○	○	○	○	○	○	
	Hupp MAGNAWALL 600	○	○								○	○	○	○	○	○	
	Kwik-Wall REGULAR**																
	Masonite QUICK-CHANGE**																

● indicates detailing of interfacing worked out.
○ indicates probable compatibility but details of interface not yet complete.
**indicates data on product incomplete at time of publication.

Demountable partition subsystem

Group A: partitions requiring mechanical attachment of floor and ceiling channels to other subsystems.

October 15, 1969

	Donn Products, Inc.	E. F. Hauserman, Co.	The Mills Company	National Gypsum Co.	
Partition system	Crusader	Double-Wall	Classroom	ContempoWall	P
Panel thickness(es)	3", 6"	3"	3"	2-5/8", 3-1/2" 3-3/4"	
Panel size: horizontal (stock) vertical	30" Max. 14'-0"	40" Max. 12'-0"	48" Max. 12'-0"	30", 48" Max. 12'-0"	8'-0"
Panel facing materials	Steel and/or gyp. board	Steel on gyp. board	Steel on Incomb. core	Gyp. board	S gy
Surfaces (see note 1)	be, c, v	v, be, c, mt	be, c, mt	v	
Independent faces	Yes	Yes	Yes	Yes	
Maximum fire ratings: hours Incombustible	1 hour Yes	1 hour Yes	1 hour Yes	1 hour Yes	1
Sound attenuation	STC40, STC45	STC43	STC44	STC 38-49	STC4
Lateral load (#/sq ft)	15#	5#		5-6#	5
Floor channel over carpet	Yes	Yes	Yes	No	
Accepts wiring	Yes	Yes	Yes	Yes	
Clearance for pipes	Vertical 5" Horiz. 4-3/4"	2-1/4"	1-3/4"	2-1/4"	
Relocation rate: (note 3) lineal feet/manhour	2.1	1.0	2.0-2.5	1.5-2.0	
Recommend manufacturer move	Optional	Yes	Optional	Optional	Op

Note 1. Abbreviations used to indicate finishes are:

v - vinyl
be - baked enamel
h - hardwood
hv - hardwood veneer
c - chalk finish
ci - chalkboard insert
t - tackboard
ti - tackboard insert
mt - magnetic tackboard

Note 2. Wiring possible only in partition posts, ba ceiling channels and door jambs.

Note 3. Relocation rate based upon sample case d second following sheet.

Penn Metal Co.			Virginia Metal Products Co.		(see note 4) U. S. Gypsum Co.
Penciline	Pencraft	Penwall	Corporate MS450	Twinline DF-410	Vaughan Walls
3"	3-1/4", 3-1/2"	3", 3-1/2" 3-3/4"	2-1/4", 3"	2-1/4"	2-1/4", 3", 6"
24" 8'-0" to 10'-0"	30" 8'-0"-10'-0"	24", 48-1/4" 8'-0" to 12'-0"	6" to 60" Max. 12'-0"	6" to 60" Max. 12'-0"	Max. 12'-0"
Steel on gyp. board	Steel on gyp. board	Steel, Plyw., hardw., Gyp. board	Steel on mineral wool	Steel on mineral wool	Gyp. board
be, v	be, v, c,	be, v	be, hv, v, c, mt	be, v, c, mt	
Yes	Yes	Yes	Yes	No	Yes
1 hour Yes	1 hour Yes	1 hour Yes	(3") 1 hour Yes	1 hour Yes	2 hour Yes
STC43, STC50	STC43, STC50	STC38, STC41	STC42(43db)	STC41(43.2db)	STC 36-50
5# min.	5# min.	5# min.			
Yes	Yes	Yes	Yes	Yes	
Yes	Yes	Yes	Note 2	Note 2	Yes
	2-1/2"	2-1/2"	None	None	In 6" panel 4-3/4"
1.0			1.1		
Optional			Optional		

n posts, base and/or
s.

nple case described on

Note 4. Data on this product is incomplete at time of publication of this chart.

Demountable partition subsystem Group B: partitions without mechanical attachment to other subsystems, and designed for quick and easy relocation by school personnel. October 15, 1969	(see note 5) Advanced Equipment Corp.	Donn Products Co.	E. F. Hauserman Co.	Hough Mfg. Co.	
System designation	TYPE 12	UNITIZED	READY-WALL	SERIES 8000	8
Panel thickness(es)	3"	3"	2-5/16"	3"	2
Panel size (stock): Horizontal Vertical	48", 60" Max. 12'-0"	48", 60" Max. 10'-0"	48" 7'-0", 9'-0" 10'-0", 12'-0"	48" Max. 12'-2"	Ma
Panel materials	Hardboard on honeycomb core	Steel on honeycomb core	Steel on honeycomb core		All su honey
Surfaces (see note 1)	v, h, hv, ci, ti	be, v, c	c, be	v, h, ci, ti	v, vt, h,
Weight of 10' high panel	(48") 100#		100#		1
Maximum fire ratings: hours Incombustible	None No	To be tested Yes	None Yes	None Fire-retardant	
Sound attenuation		STC38	STC38		
Lateral load		5 psf	5 psf		7
Floor attachment	Pressure/frict.	Weight/friction	Weight/friction	Pressure/frict.	Press
Mounted over carpet	Yes	Yes	Yes	Yes	
Ceiling attachment	Spline or pressure	Engages track	Clip required	Uplift-25#/lf	Up (see
Relocation rate: (see note 3) Lineal feet/manhour		30-40	30-40	16	5

Note 1. Abbreviations used to indicate finishes are:

v - vinyl	hv - hardwood veneer	t - tackboard
be - baked enamel	c - chalk finish	ti - tackboard insert
h - hardwood	ci - chalkboard insert	mt - magnetic tackboard

Note 2: Wiring possible only in partition posts, base and/or ceiling channels and door jambs.

Note 3: Relocation rate based upon sample case described on second following sheet.

Note 4: HOUGH 8100 is being develop concerning the compensation u address listing.

Note 5: Data on this product is incomp

Hough Mfg. Co.		Air Wall Division, Hupp, Inc.		Kwik-Wall Co. (see note 5)	Masonite Corp. (see note 5)
ES 8000	8100	MagnaWall 400	MagnaWall 600	Regular	Quick Change
3"	2-7/8"	1-5/8"	2-1/8"	1-3/4", 2-1/4"	1-19/32"
48" 12'-2"	48" Max. 12'-2"	36", 47-1/2" Max. 12'-0"	48" Max. 12'-0"	48"	
	All surfaces on honeycomb core	Plywood on honeycomb core	Fibertex on honeycomb core	Chipboard and honeycomb	
, ci, ti	v, vt, h, hv, c, t, mt	hv, h, v, ci	hv, h, v, ci, t	v, h, hv, plyw.	v, h, masonite
	105#	(48") 90#	(48") 139#		
None retardant		None Fire-retardant	None Fire-retardant	None	
		STC28	STC38		STC40
	7.5 psf	5 psf	5 psf		
ure/frict.	Pressure/frict.	Weight/friction	Weight/friction	Pressure/frict.	Floor channel
Yes	Yes	Yes	Yes	Yes	Yes
ft-25#/lf	Uplift-5#/lf (see note 4)	Magnetic	Magnetic	Uplift	
16	50-60	40-50	40-50		

H 8100 is being developed as a replacement for their SERIES 8000 partitions. Additional data
ing the compensation uplift mechanism of this new system is found in the manufacturer's
listing.

this product is incomplete at time of publication of this chart.

Establishing the Relocation Rate.

The relocation rate for demountable partitions, both Group A and Group B, is estimated by use of a sample problem. This sample problem was originally developed by Building Systems Development, Inc., for the collection of data for the Pittsburgh, Pennsylvania, Great High Schools Program. The problem is designed to reflect a credible situation and the relocation rate determined for the problem conditions is a reasonable although not precise estimate.

The problem is to estimate the relocation rate in lineal feet per manhour of work for the following conditions. Relocation rate is here defined as the number of lineal feet of partition which can be taken down, moved, and reerected in one manhour.

(1) A 90'-0" by 140'-0" space with 10'-0" ceilings is subdivided into a variety of spaces by demountable partitions.

(2) It is assumed that there are no doors in the space, that all openings are ceiling height and a minimum of 3'-0" wide.

(3) There are no services within the demountable partitions.

(4) A minor reprogramming of the educational space indicates a movement of 200 lineal feet of partitions. This movement includes:

    (a) Taking down 200 lineal feet of partition.

    (b) Moving the demounted panels to another place within the 90'x140' space.

    (c) Reerecting the 200 lineal feet of partition in the new location.

Space on the charts preceeding this page is left for the manufacturer to indicate whether partition relocation with local school personnel is desireable. The relocation rate should be estimated for work crews as recommended by the manufacturer. If school personnel is recommended, make the estimate for them, if manufacturer personnel is recommended, make the estimate for them, etc.

Manufacturers of demountable & moveable partition subsystems.

1. Advanced Equipment Corporation
   241 Crescent Way
   Anaheim, California 92631
   System: TYPE 12
   Contact: Robert Sharp
   Telephone: (714) 635-5350

2. Donn Products, Inc.
   700 Bassett Road
   Westlake, Ohio 44091
   System: (1) CRUSADER
   (2) UNITIZED
   Contact: Pete Renard
   Telephone: (216) 871-1000

3. E. F. Hauserman Co., Inc.
   5711 Grant Avenue
   Cleveland, Ohio 44105
   System: (1) DOUBLE-WALL
   (2) REDI-WALL
   Contact: Cliff Losse, Manager – Marketing
   Telephone: (216) 883-1400

4. Hough Manufacturing Corporation
   1023-1050 South Jackson Street
   Janesville, Wisconsin 53545
   System: SERIES 8000
   Contact: Don Holloway
   Telephone: (608) 756-1241

   Note to data on chart: 3" total travel on upper connecting trim with 5#/lf uplift throughout. Upper trim may be set for nominal 1" extension in place, and under seismic conditions will follow ceiling upward for 2" with no decrease in uplift pressure. Or, under potentially changing live load conditions, snow, settlement, etc., extension may be nominally set at 2" and will accomodate a lowering ceiling for 2" with no increase in uplift.

5. Airwall Division
   Hupp Corporation
   8140 East Rosecrans Avenue
   Paramount, California 90723
   System: (1) MAGNAWALL 400
   (2) MAGNAWALL 600
   Contact: Arthur G. Imbrecht
   Telephone: (213) 636-1001

6. Kwik-Wall
   Division of Capitol Wood Works
   P. O. Box 3267
   Springfield, Illinois 62708
   System: REGULAR
   Contact:
   Telephone: (217) 522-5552

7. Masonite Corporation
   29 No. Wacker Drive
   Chicago, Illinois 60606
   System: QUICK-CHANGE
   Contact:
   Telephone: (312) 372-5642

8. The Mills Company
   965 Wayside Road
   Cleveland, Ohio 44110
   System: CLASSROOM
   Contact:
   Telephone: (216) 531-1100

9. National Gypsum Corporation
   325 Delaware Avenue
   Buffalo, New York 14202
   System: GOLDBOND CONTEMPOWALL
   Contact: John H. Bacon, Specialty Systems Engineer
   Telephone: (716) 852-5880

10. Penn Metal Corporation
    P. O. Box 1468
    Parkersburg, West Virginia 26101
    System: (1) PENCILINE
    (2) PENCRAFT
    (3) PENWALL
    Contact: Larry Guinn
    Telephone: (304) 295-4581

11. United States Gypsum Corporation
    101 South Wacker Drive
    Chicago, Illinois 60606
    System: VAUGHAN WALLS
    Contact: R. L. Selbe, Project Manager, Component Systems
    Telephone: (312) 321-4000

12. Virginia Metal Products, Inc.
Division of the Gray Co.
Orange, Virginia 22960

System: (1) CORPORATE
(2) TWINLINE

Contact: Don Moffat,
Western Regional Manager

Telephone: (714) 836-5072

The Systems Clearinghouse was established by a grant from the Educational Facilities Laboratories, Inc. This report, as well as subsequent publications dealing with building systems, is available from the Systems Division, School Planning Laboratory, 770 Pampas Lane, Stanford, California 94305.